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(54) METHOD FOR DETECTING SUPPORT WEIGHT TO MONOLITHIC STRUCTURE

(57)Abstract:
PURPOSE: To facilitate the judgement of adhesion amount, by method wherein a wt. is preliminarity printed on the outer surface of a monolithic structure when said structure is immersed in an aqueous slurry of a solid powder to support said solid powder and the printed structure is preliminarily covered with water repellent paint and, after the solid powder is adhered to the monolithic structure, the printed character is read to calculate the amount of the powder.
CONSTITUTION: When a predetermined amount of coating is applied to a honeycomb structure composed of a metal or ceramic by immersing said structure in an inorg. powder-containing slurry, the following method is taken. That is, when it is necessary to apply heat-treatment to said structure later, the printed of a wt. is applied to the structure using heat resistank ink containing a manganese or cobalt compound and the printed structure is covered with transparent water repellent paint based on a fluororesin. Thereafter, if necessary,the volatile compound in the coating is removed under heating and the structure is immersed in an inorg. substance-containing slurry to apply coating to the structure. By this constitution, the wt. written on the structure by printing before coating and the wt. of them structure after coating are operated to judge whether a desired amount of the powder is adhered.

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METHOD FOR DETECTING WEIGHT CARRIED ON INTEGRATED STRUCTURE

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METHOD FOR DETECTING WEIGHT CARRIED ON INTEGRATED STRUCTURE

[Ittai kozobutsu eno tanji juryo no kenchi hoho]

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[There are no amendments to this patent.]

Claims

1. A method for detecting a weight carried on an integrated structure, characterized by the fact that in immersing and carrying a solid powder in an aqueous slurry onto an integrated structure, the weight is preprinted on the surface of said integrated structure; a water-repellent paint is spread on the printed letter, immersed into said aqueous slurry, dried, and if necessary, weighed after temporarily baking at high temperature; and the above-mentioned printed letter is read out, so that the amount of powder carried is calculated.

2. The method of Claim 1, characterized by the fact that the integrated structure is a heat-resistant inorganic carrier.

3. The method of Claim 1, characterized by the fact that the solid powder is a heat-resistant inorganic powder.

4. The method of Claims 1, 2, or 3, characterized by the fact that the water-repellent paint forms a transparent silicon group or fluorine group water-repellent coated film.

Detailed explanation of the invention

Industrial application field

The present invention pertains to a method for detecting the amount being carried on an integrated structure. Specifically, the present invention pertains to a method that preprints the weight on the surface of a heat-resistant inorganic carrier when immersing and carrying a heat-resistant inorganic powder in an aqueous slurry onto said carrier, spreads a water-repellent paint on it, immerses and carries it so that said aqueous slurry may not be fixed onto the printed letter, and can easily detect the amount of said powder being carried.

In other words, the present invention provides a method that can industrially, efficiently, and effectively carry out a process that attaches a film having a high surface area by immersing and carrying a heat-resistant inorganic powder having silica, silica-alumina, alumina, zirconia, titania, etc., as a base in an aqueous slurry onto an integrated structure having a honeycomb structure or a porous foamed structure composed of a metal or ceramic.

Prior art

In case an alumina film is formed or coated on an inorganic substance such as catalyst or catalyst carrier on an integrated structure such as honeycomb carrier made of ceramic, a method that immerses one or several integrated structures into a slurry solution for coating, draws it out, and removes the extra slurry by shaking it off or blowing with a high-pressure liquid or absorbing under reduced pressure so that a fixed necessary amount being coated may be attained. At that time, if the integrated structures are made of ceramic, since they are usually porous and each of them has a different pore distribution or capacity or its weight is not fixed in terms of manufacture process, the amount being coated is easily scattered, even if coating is applied by the same operation. Also, even if a fixed necessary amount of coating is applied to the integrated structures with a different weight, various kinds of handling operation such as drying and baking are added, so that confirming the amount coated on a certain integrated structure is very complicated and difficult.

As a method for reliably confirming the amount being coated on each integrated structure, a method that writes each manually measured weight value on each of the outer

peripheral wall surfaces of the integrated structures, applies a prescribed coating operation if necessary, dries and bakes them, polishes and reads the above-mentioned written sites, re-measures the weight, calculates the difference before and after coating, and controls them is considered. However, if a large amount of integrated structures is processed, much labor is required, and a risk of causing an error when calculating, reading, and writing cannot be avoided.

Constitution of the invention

The present invention overcomes these conventional drawbacks. In other words, the weight of a general structure itself is measured in advance, and if necessary, the numerical value measured is printed along with its lot number, etc., on a prescribed part of the outer peripheral wall surface of the above-mentioned integrated structure. Then, a transparent water-repellent aqueous coating liquid is attached to the periphery including the printed numerical value, and if necessary, the volatile portion of the coated film is removed by drying, etc. Then, the integrated structure is immersed into a slurry containing an inorganic substance powder, and a prescribed amount of coating is carried out. Also, in the coating operation, since the part on which the numerical value is preprinted is subjected to a water repellency treatment, the part is not coated. Then, after finishing a prescribed heating operation such as drying and baking, the weight of the integrated structure is remeasured, the weight difference before and after coating is calculated, and the amount of coating of the integrated structure is controlled. This method is characterized by the fact that all the processes of weight measurement, writing, coating of the water-repellent coating liquid, measurement after coating the inorganic substance, calculation before and after reading and coating, and the decision on whether or not the amount of coating is in a prescribed range can be controlled by a computer without human intervention.

Also, in the present invention, the printed letter on the outer peripheral part of the integrated structure requires the use of a heat-resistant ink containing manganese compound, cobalt compound, graphite, etc., if a heat treatment is applied later.

As the water-repellent aqueous paint being used in the present invention, a transparent paint is preferable to read out the numerical value written in advance, and a spray type or brush coating type mainly composed of fluororesin or a wax emulsion for ceramics is used. In addition, any paint can be used along as its coated film is slightly soluble in water and water-repellent.

As the integrated structure, a so-called honeycomb-shaped carrier that is usually made of ceramic and baked at a high temperature of 1,000°C or higher in advance is representatively used, and honeycomb carriers made of ~~Kojerite [transliteration]~~ Cordierite, mullite, α-alumina, zirconia, titania, titania-silica, aluminum titanate, ~~Pentalite [transliteration]~~ Petalite, spodumene, aluminosilicate, magnesium silicate, etc., are used. In addition, an integrated structure formed by using a heat-resistant metal having oxidation resistance such as stainless steel or Fe-Cr-Al alloy is also

used. As the shape of passage openings (cell shape) of the honeycomb, hexagonal, tetragonal, triangular, or corrugated shapes are used, and since the outer peripheral part formed as an integrated structure has no projecting part and is flat, symbols such as numerical values can be written into it.

The inorganic compound being coated on the integrated structure may be a milled oxide type, and part of it may also be a salt type. Usually, it is coated in a slurry in an aqueous medium.

Hereto, the embodiments of the present invention have been described in detail, however needless to say, the present invention is not limited to these [embodiments].

(Weight control in the manufacture of a monolithic catalyst with a honeycomb structure)

(i) The weight (W_1) of a honeycomb carrier is weighed, and the weight W_1 is automatically printed on the carrier. In the printing, a signal from a scale is automatically input into a printer through a computer, and its numerical value is printed.

(ii) After printing, a water-repellent transparent paint is spread, and the solvent is volatilized by drying.

(iii) A powder in which an active alumina as a catalyst component is carried on a noble metal is prepared as an aqueous slurry, and the carrier in which the above-mentioned printed letter is protected with the paint is immersed into the slurry, pulled out, and the extra slurry is blown off by high-pressure air flow, etc.

(iv) Then, the carrier coated is dried at a temperature of 100-150°C and if necessary, baked, so that a completed catalyst is attained.

At that time, it is weighed, and the weight (W_2) is recorded. The numerical value (W_2) and the weight (W_1) printed on the catalyst body are read out, and the difference is calculated ($\Delta W = W_2 - W_1$). Whether or not the amount carried is an optimum value is detected by the ΔW, and the quality as a product is decided.

With the adoption of the method of the present invention, the amount being coated can be reliably controlled, and errors such as oversight and miswriting that cannot be avoided even by a manual control are eliminated.